

Chapter 7

THE NATURE OF THE BUSINESS:

Construction, Operations, and Litigation at the Sasco Smelter

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Introduction

The birth of the electrical age at the end of the nineteenth century created a growing demand for copper that would push Arizona to the forefront of the mining world. With this copper boom came a wave of new techniques, equipment, and companies that would forever change the face of the state's mining industry. One of the most visible changes of this new age was the appearance of large copper smelters where metal was extracted from rock through a process of melting and separation. By the early twentieth century, smelter technology had evolved into a mixture of science and art that was essential to the mass production of cheap copper. Yet despite their importance to the industry, the history of Arizona's early copper smelters have often been overlooked; lost in the shadow of the mines they so crucially supported.

Like most mining ventures, copper smelters were often financially risky operations. The equipment and expertise needed to build a large smelter required a huge initial investment in both time and money. Once running, they required constant maintenance and supervision. As a result, many of Arizona's large smelters were controlled by larger parent companies and often financed by distant investors. This could create a complex web of economic and legal ties that could impact the success of a smelter as much as the technical challenges of its operation. While the smelter's metallurgist carefully analyzed and controlled the chemical processes of the blast furnace, the owners were often involved in the equally important task of analyzing and manipulating the volatile combination of market prices, financial backers, and legal maneuvers.

One of the best examples of the difficulties and challenges facing the early copper smelters can be seen in the short life of Sasco, a small smelter town north of Tucson that was founded and supported by the Southern Arizona Smelting Company. Built to handle the ores of the nearby Silverbell mines, the Sasco smelter was both a product and a victim of the period's economic trends. Like most copper

smelters, the Sasco smelter's birth (and ultimately its death) was tied to the fortunes of a much larger network of mines and companies. And like many mining ventures, the smelter's existence was always guided by a constant struggle between men and money; technology and nature.

The Development Company of America

The series of events that would lead to Sasco's founding begins with a gold mine, an investing firm, and an ambitious businessman named Frank M. Murphy. Born in Maine and raised in Wisconsin, Murphy first came to Arizona in 1878 where he quickly developed an interest in the territory's budding mining industry. In 1887, he influenced investor "Diamond Joe" Reynolds to purchase the Congress gold mine near Wickenburg and later assumed management for all of Reynold's Arizona properties. In addition to mining, Murphy's broad interests also included banking and railroads where he played leading roles in the founding of the Prescott National Bank and the construction of the successful Santa Fe, Prescott, and Phoenix line. In 1894, Murphy purchased the Congress mine from the Reynold's estate. While reorganizing the property, he began to lay the foundations for a project that would be the most ambitious venture of his career and would eventually lead to the founding of Sasco and the construction of the smelter.

Murphy's experiences with both mines and railroads led him to recognize that the growth of the two industries was interrelated. Reliable transportation and affordable processing facilities were as important to the success of a profitable mining venture as was the quality of the mine's ore. Murphy began to envision a network of linked mines, railroads, and supporting companies all owned and operated under a single organization. In 1901, he launched the Development Company of America, which would oversee and finance such a network of mines and railroad companies. The railroads would provide transportation for the mines and profits

would be reinvested by the DCA in the purchase and development of additional properties. While organizing the company, Murphy included several of his business partners from the Congress mine, which became one of the first official DCA properties.

Serving on the board of directors were fellow investors and mine owners, Eliphlet B. Gage and Henry Mauris Robinson. An experienced investor and businessman, Gage had enjoyed large profits from Tombstone's Grand Central silver mine until flooding forced its closure in the late 1880s. Gage's search for other mining ventures led him to join Murphy in the purchase of the Congress mine and he played a leading role in its management. Robinson inherited his interest in the DCA from his father-in-law, C.D. Arms, who had been one of Gage's partners in both the Grand Central and Congress mines. Despite a lack of mining knowledge, Robinson's experience as a lawyer would prove useful during many of the company's business negotiations.¹ Backing Murphy and his business partners was a large group of wealthy eastern capitalists and investors that included V.L. Mason (who also served as the company's Vice President), B.P. Cheney, and W.H. Bushnell. Most of the DCA's subsidiary companies would finance their purchases through the sale of stocks and bonds. Additional funds for the DCA would be generated by selling bonds against those already issued for the subsidiaries; a practice that would eventually have grave consequences.²

While Murphy, Gage, and Robinson took care of the DCA's business operations, much of the fieldwork and technical details were handled by an energetic mining engineer named William Fields Staunton. A graduate of the Columbia School of Mines, Staunton had arrived in Tombstone in 1883 where he served for ten years as chief engineer for the Tombstone Mining and Milling Company.³ When flooding closed the mines, Staunton accepted a position at Congress and would soon be playing an important role in the operations of the DCA. A workaholic with a love of technical challenges, Staunton's engineering skills proved a perfect match for Murphy's business vision. Together, the two formed the mind and muscle behind most of the DCA enterprises.

Shortly after its founding, one of the DCA's first actions was the sudden purchase of the Tombstone silver mines. Although flooding and low silver prices had closed most of the mines in the early 1890s, pumping technology and equipment had

improved enough by the turn of the century to provide an opportunity to reclaim the rich silver ores known to exist below the water level. Under Robinson's direction, the DCA purchased all of the major Tombstone mines for the sum of one and a quarter million dollars and organized them under the direction of the Tombstone Consolidated Mines Company.⁴ While workers began the process of pumping and reclaiming of the lower levels, the DCA continued to expand its holdings and soon acquired the Poland and Lookout mines in the Bradshaw Mountains, as well as a large tract of timber in the Sierra Madres of Mexico.

The Imperial Copper Company and the Founding of Sasco

In the summer of 1903, the DCA purchased the Union and Mammoth copper mines in the Silverbell Mountains and formed the Imperial Copper Company with Gage as president and Staunton as general manager.⁵ At the time of the purchase, a small 50-ton capacity smelter was in operation at the mine and the processed copper was hauled by wagon to the Southern Pacific Railroad at Red Rock. However the new owners quickly realized that more efficient means of processing and transportation would be needed to make the property a success. In a 1903 report to the DCA, Staunton estimated that the cost of processing ore with the current 50-ton smelter would run about nine cents per pound of finished copper. With copper valued at twelve to fourteen cents per pound, the net profit for the entire existing ore bodies would be between \$528,000 and \$880,000. By building a larger 300-ton smelter and a direct railroad line to the mine, Staunton argued that operating costs could be reduced to about six cents per pound and profits raised as high as \$1,408,000. The larger smelter would also be able to handle lower grade ores and offered the possibility of producing additional revenue as a custom smelter for surrounding mines. To help finance these additional projects, the Imperial Copper Company sold two million dollars worth of mortgage bonds to the Bankers Trust Company of New York at an interest rate of six percent.

Construction on the rail line began shortly after the mines were purchased, and by 1904 the Arizona Southern Railroad (ASRR) had connected the Silverbell mines to the main Southern Pacific Railroad at Red Rock. Serious planning for a new smelter, which required considerably more time and financing, did not begin until 1905. The initial design called for a single 300 to 350-ton smelting

furnace with room for an additional furnace to be added later. With little previous experience in smelter construction, Staunton began investigating neighboring smelters and asking for estimates from equipment manufacturers. As news of the project spread, various consultants and business interests visited the company, but suggestions of partnerships were turned down. All aspects of the smelter construction and operation would be handled by the DCA and its subsidiaries; serving as a demonstration of the company's technical and financial strength.

While planning the details of the smelter design, Staunton also began to search for the construction site. Building another smelter at the mine was ruled out due to the rough terrain and a lack of water. An ideal location would require a level building site, reliable water supply, and be within easy distance of the railroad. Ultimately, Staunton selected a spot below a small hill near Cerro Prieto, seven miles west of Red Rock. The hill would provide stone for construction and an elevated perch for the smelter's water tanks and ore bins. Water could be pumped from the bed of the Santa Cruz River two miles away. Because the site was located on government land, the DCA (with the assistance of local ranchers) petitioned to have the area surveyed and eventually acquired the property through purchases and land script.

In August 1906, the Southern Arizona Smelting Company was founded with \$1,500,000 in capital, including \$800,000 worth of stock purchased by the Imperial Copper Company. E. B. Gage was designated as company president, Staunton as Vice President and General Manager, and Murphy and Robinson led the board of directors.⁶ Mead Goodloe, who had served as assayer at the Congress mine, was made superintendent and construction supervisor. Hoping to minimize construction costs, Murphy and Staunton had to carefully evaluate each smelter feature and negotiate with a wide range of manufacturers for the best prices.

Even as construction was starting to get under way, a nation-wide economic panic in 1907 resulted in lower copper prices and made it difficult to obtain workers and materials. As summer approached, rising temperatures further hampered construction. Writing from Silverbell in July, Staunton noted that work at the smelter was "going very well considering the excessively hot weather which is telling on the efficiency of the men to some extent. It is 116 degrees up here at the mine as I write and the Lord only knows what it is down on the flat country."⁷ In addition to the work at Sasco, Staunton was still

responsible for directing the operations of the other DCA properties and often found himself pulled away from his newest project. Despite these difficulties, by the summer of 1907 the foundations of the smelter were starting to take shape as was a small work camp that had sprang up nearby. When a post office was opened in July, it was Robinson who came up with the official name for the new community: "Southern Arizona Smelting Company.... Why, S.A.S.CO., of course!"⁸

Located across the railroad tracks south of the smelter, the initial town site contained little more than a collection of wood and canvas cabins scattered behind a row of company buildings. An adobe boarding house and a mess hall provided living quarters for the single men. Some of the more well-to-do also built more comfortable and permanent homes. The largest residence in the small camp was the nice house that superintendent Goodloe had constructed for his wife and three children. Known as "the big house", Goodloe's home would remain a center for Sasco's social and political circles. He also had a small stone water fountain constructed in the plaza near the center of the housing area. Often surrounded by a small garden, the fountain offered residents a pleasant escape from their harsh desert surroundings.⁹

Throughout the trials of construction Goodloe proved an ideal manager, prompting Staunton to later describe him as a man who "loves a smelter and would rather run one than eat his dinner or sleep."¹⁰ Goodloe's ability and dedication were fortunate for the company, since Staunton's other responsibilities never allowed him to stay long at any one location. By train, horse, stage, and car, Staunton remained in a constant circuit between the Poland mines, Congress, Tombstone, Silverbell, and Sasco. Attempting to improve his travel time along the Silverbell - Red Rock route, Staunton modified two of the company's older Cadillac automobiles with special flanged wheels so they could run on the railroad tracks. Although more efficient than horses, Staunton's homemade rail car also became the source of several unexpected adventures.

Once, while carrying a load of visitors down from the Silverbell mine, Staunton's front left wheel flew off the axle as they were gliding across a trestle. With the axle scraping along the rail, Staunton managed to bring the car safely to a stop after which his guests were only too happy to continue the rest of the trip on foot. Another near disaster occurred one night in Sasco as Staunton, speeding through town,

suddenly saw the dark outline of a man lying asleep on the tracks. With no time to stop or even shout a warning, Staunton could only watch as his car sped over the motionless figure. Fortunately, the man had been lying entirely within the bounds of the rails and escaped injury. Looking back along the tracks, Staunton was surprised to see that the man was not only unharmed, but also still asleep.¹¹

The Design and Construction of a Copper Smelter

While the community grew along the south side of the railroad, the smelter structures dominated the north side, from the edge of the tracks to the far end of the smelter hill. Before beginning construction on the blast furnace, the company built several short side tracks off the main line that ran north into the smelting complex and even through the very center of the future furnace building. The tracks were used to import building materials during construction and would later be used to load the finished copper matte once the smelter was in operation. In addition to the blast furnace itself, the smelter complex included a small city of additional shops, ore bins, and buildings. The structures directly related to the processing of ore stood on the northern end of the complex and along the slopes of the smelter hill. Warehouses and machine shops spread along either side of the railroad siding between the smelter and the main rail line.

The design of the Sasco plant was typical of many western smelters and was based on the same fundamental metallurgical concepts that had been used for centuries. The art of smelting hinges on the principle that most valuable metals (such as gold, silver, and copper) are considerably heavier than the more common minerals that often contain them. When ore is heated in a furnace until the rocks become liquid, the heavier metals sink to the bottom and form the valuable mixture known as matte, while the lighter remaining materials rise to the top and form a waste product called slag. By skimming off the slag and isolating the remaining matte, the metals can be separated and extracted from the rock.

But behind this simple concept lay a far more complex world of chemical processes that determine how quickly the ore will melt and how effectively the matte and slag will separate. A smelter's metallurgist would often need to add additional compounds, referred to as flux, in order to achieve the perfect chemical balance and maximize the smelting process. This was especially true of quartz ores which frequently required some form of flux (typi-

cally limestone) to counteract the acidic properties of the quartz silica. Ultimately, effective smelting was an artistic mixture of science, experience, and intuition with the chief metallurgist mixing ores and flux like a cook adding salt and baking powder to a cake mix.

Because identifying the chemical composition of the ore was so important, each shipment from the mine was sent through a sampling mill for analysis. At Sasco, ore trains from Silverbell would pull off the main railroad just west of town and follow a siding up the western slope of the smelter hill opposite the smelter complex. Near the northern summit of the hill stood the tall wooden frame of the sampling mill where a portion of each ore shipment went through a series of crushers, rolls, and Vezin automated samplers until a single small sample was obtained which represented the ore shipment as a whole. This sample was then carefully assayed to learn its exact chemical composition and to determine if the ore would require any additional materials or flux. Sampling also allowed the smelter to determine the amount of valuable metals that should be expected after the smelting process. This was especially important if the smelter was going to do custom smelting for mines owned by other companies.

After passing the sampling mill, the ore was dumped into a series of long wooden ore bins supported on the side of the hill by a row of heavy concrete walls. Smaller ore cars, traveling along a high trestle, would transport the ore from the bins into the upper feeder level of the furnace building below. Enclosed in a four-story shell of steel beams and metal siding, the main smelter plant was divided into furnace and converter sections. Like many smelters at the time, ore at Sasco was melted in a huge steel oven known as a blast furnace. The main furnace consisted of a sixteen-foot high rectangular steel oven with walls constructed of hollow sectional plates. Operators could control the furnace temperatures by circulating water through the hollow oven walls; a process that earned such furnaces the nickname of "water jackets". Incoming ore was dumped into the top of the furnace, along with large amounts of coke or charcoal for fuel, and the two would be kept burning at a temperature of over 2300 degrees Fahrenheit. Electric blowers constantly forced blasts of air into the lower portion of the furnace, increasing the temperature and driving the excess gases and dust out through the top. The escaping gases traveled by pipe to a long brick settling room, called a dust chamber, where the larger

particles would collect and later be returned to the furnace, while the lighter waste gases were vented out through a 175-foot-high steel smoke stack at the base of the hill.¹²

As the ore in the furnace reached its melting point, it would flow from the base of the furnace into a nearby holding tank, known as the fore-hearth or settler. Here the heavier metals would sink to the bottom to form the metallic matte while the lighter waste materials would float to the top and form slag. Periodically, the slag would be tapped off through spouts and transported by wheeled slag pots to a waste dump on the hillside below the ore bins. The remaining matte, which now consisted of about 40% copper, would be poured into giant steel kettles and transported by an electric crane to the nearby converters. In the converters, the matte would be reheated to remove any remaining iron and sulfide impurities, and finally emerge as 98 to 99% pure copper.¹³ Molded into 300-pound bars, and grouped into 100,000-pound lots, the finished copper would be loaded onto train cars for transportation to metal refineries in the east.

In addition to the smelter building itself, there were also a large number of supporting structures and workshops. The largest of these secondary buildings were the company power plant and boiler house which stood just to the south of the smelting plant. Here the steam from four 10' by 18' internally fired boilers was converted into electricity by a Westinghouse-Parsons 500-kw turbine generator and a maze of transformers, condensers, and switchboards.¹⁴ In addition to powering the smelter equipment and blowers, the plant also provided electricity for the towns of Sasco and Silverbell. Near the power plant were the carpenter shop and warehouse and nearest the main railroad stood the blacksmith shop. In addition to these larger buildings, the smelter area also contained numerous smaller storage sheds, offices, and workshops.¹⁵

After nearly a year and a half of construction, the smelter was finally completed in early February of 1908. Despite economic difficulties, extreme heat, and limited resources, the DCA's dream of owning its own copper smelter had finally become a reality. Amid a crowd of workers, engineers, and businessmen the smelter was started, or blown in', for the first time on February 5.¹⁶ It was during these first days of operation that a minor accident almost destroyed the plant. While carrying a load of molten slag away from the settler, one of the huge 80 cubic foot slag pots derailed on its way to the dump. By the time workmen were able to clear the track and

roll up a new pot, the remaining slag in the settler had begun to cool, forming a solid plug in the pouring spout. With no way out, the slag in the settler would begin to solidify, turning the equipment into a worthless block of inseparable rock and steel. It would be complete and irreparable destruction.

Fortunately for the company, a young workman named Ned Carroll kept his mind and refused defeat. Although not an engineer, Carroll was, in Staunton's words, 'an artist with a sledge hammer.' With his hammer in one hand and a steel bar in the other, Carroll pushed his way past the stunned workers and engineers and attempted a rescue that few in the crowd would have tried. Entering the searing envelope of heat surrounding the furnace, Carroll planted one end of his steel spike against the jammed spout of the settler and with his hammer, began pounding a hole into the small stony plug that separated him from several tons of molten rock. After a moment of effort, the plug began to break and as Carroll jumped back, slag once again poured free into a waiting pot. The smelter was saved.¹⁷

Life and Economics in a Smelter Town

Numerous smaller difficulties and setbacks hindered the first days of operations at Sasco, but each was over come and soon the smelter was running in full production twenty-four hours a day, with J. H. Cready as the foreman for the day shift and Joe Willetts leading the night crew. By the end of June, the smelter had processed some 41,001 tons of ore. Yet despite its successful startup, the company soon found itself in a difficult financial situation. During construction, the price of copper had fallen from around 17 cents per pound to less than 13 cents. At the same time, the quality of the Silverbell ore had been steadily declining and on average contained less than five-percent copper by the time the smelter was in operation. By keeping the cost of smelting to less than five dollars per ton, Staunton and Goodloe allowed the plant to break even on operating expenses, but the company still bore a huge deficit due to loans and associated interest. Hoping for an increase in either copper prices or ore grade, they decided to continue with operations.

Staunton and Goodloe also tried to increase the smelter's efficiency by continuously looking for ways to increase capacity or improve the smelting process. In November of 1908, a second furnace was added to increase the plant's capacity to 700 tons per day and the size of the ore bins was increased from 6,000 to 11,000 tons. The perfor-

mance of the first furnace, which remained in continuous operation for over a year without repairs, testifies to the attention given to the smelter's construction and operation.¹⁸ Goodloe also experimented with methods for returning the copper-rich flue dust in the dust chamber to the smelter. Before being returned to the furnace, the dust was mixed with converter slag to increase its viscosity and prevent it from again being blown to the dust chamber.¹⁹ This method proved to be quite successful, prompting Goodloe to apply for a patent on the process. By the fall of 1909, Sasco's two blast furnaces had processed some 245,540 tons of copper ore including 3,140 tons of custom ore purchased from other mines.²⁰

Keeping track of specific expenses and isolating costs proved to be a complex task due to the often-ambiguous relationships between the mines, the railroad, and the smelter. Although all of the companies were run by the DCA, the Southern Arizona Smelting Company, the Imperial Copper Company, and the Arizona Southern Railroad were treated as legally separate businesses. Ore from the mines had to be 'purchased' by the smelter and transportation costs had to be paid to the railroad. Yet because the operations of the three businesses were so intertwined, it was often difficult to accurately separate their finances. For example, the railroad had to charge the Imperial Copper Company for each ton of ore shipped to the smelter, but since the ICC was the primary shareholder of the ASRR nearly all of the resulting 'profits' were returned to the ICC as dividends. For simplicity, the profits and losses of all three companies were often combined and summarized as a single operation, which further blurred the distinction between the individual businesses.

Accurate measurements of monthly costs and productivity were further complicated by fluctuations in the price of copper and by the quantity and quality of the ore being sent to the smelter. Staunton would often attempt to isolate the expenses associated with individual operations, but noted that "the nature of the business, however, prevents absolutely accurate monthly statements on account of varying prices to be received for product and varying amounts of metals passing through the plant".²¹ Despite the company's attempts to control expenses and improve capacity, the plant continued to struggle financially as copper prices and the mine's ore grade continued to decline.

If the company was not providing outstanding returns for its owners and investors, it did provide a steady income for the large number of workers who

came to seek jobs with the smelter, sampling mill, or railroad. By the spring of 1909, the town had reached a population of about 600 people with 175 men on the company payroll.²² Mexicans and Mexican-Americans made up the majority of the work crews, and as in many mining towns of the time, the Sasco plant followed the unfortunate practice of keeping them to specific jobs and often at lower pay rates. The typical daily wages for a ten to twelve hour shift ran as follows²³:

Foreman	\$3.50 - \$5.00
Furnace Men	\$4.00
Furnace Helpers (Mexican)	\$2.40
Cranemen	\$4.25
Engineers	\$4.50
Machinists	\$4.25
Oilers & Wipers	\$3.50
Steam Locomotive Engineers	\$4.00
Trainmen (Mexican)	\$2.40
Laborers - 12 hour shift	\$2.40
Laborers (Mexican - 10 hour shift)	\$1.75

In addition to Mexicans and Americans, Sasco's work crews included natives of Germany, Denmark, England, Canada, Sweden, and the Philippines. Instead of joining the existing town site, many of the workers settled along the north side of the railroad tracks to the east of the smelter and by July of 1908 it became necessary to survey a second series of lots called the Smelter Addition. This second town center became the real heart of Sasco's working class community, while the original town site, nicknamed the "Barrio Americano," remained largely the home of the supervisors and engineers.²⁴

Sasco's founders wished to avoid the rough reputation of other mining towns and made every attempt to portray the camp as a respectable and promising community. A promotional organization called the Sasco Townsite Company served as a sort of chamber of commerce, encouraging new residents and attracting investors. Although Sasco's population included many drifters and single men, the company encouraged the hiring of married men whom they considered to be more reliable. To attract workers with families, the company built and rent-

ed a number of simple wood and canvas houses at both Silverbell and Sasco. Many of the poorer families lived only in simple hand-built huts, or “jacals”, made of brush and dirt. Sometimes, extra protection from the elements was obtained by plating the walls with strips of metal from discarded food tins.²⁵

Census records indicate that the company was relatively successful in its attempts to create a family town. Of Sasco’s 500 residents in 1910, over a third were children.²⁶ Many came from large families; often surviving on the few dollars per day earned by a smelter hand or railway worker. Carlos Valenzuela supported his wife, Guadalupe, and their three children with his smelter job. Andres and Pedro Martinez worked to provide an income for their widowed mother and seven younger siblings. Nat Huston, a thirty-seven year old immigrant from the West Indies made a living for his family by serving as cook in the local hotel. Those that were unable to find positions with the company survived as temporary workers or part-time ranch hands. Fifty year old Trinidad Francis Daniel supported his wife and eight children by working at odd jobs.

Despite its family-based roots, the small town also developed a rougher side when the combination of paychecks, saloons, and visiting cowboys sometimes resulted in a barroom brawl or petty theft. Occasionally, Sasco was also the scene of more violent acts. In February of 1908, the Arizona Daily Star had the following report on the midnight shooting of deputy sheriff S. O. Thompson while he was attempting to arrest one Frank Hill in Sasco, “Hill had been making himself very obnoxious for several days to the citizens of Sasco by playing bad man and threatening several men with his gun, and it was while attempting his arrest that Thompson was shot in the hand, the bullet penetrating the fleshy part of the hand and completely severing the middle finger.” After the shooting, Hill was quickly arrested and taken to trial in Florence where he was sentenced to a year’s stay in the Territorial prison.²⁷

In addition to the supervisors and the workers, the growing community also developed a third social group in the small band of merchants and businessmen who provided a wide range of products and services. Shortly after the town’s founding, the Imperial Copper Company opened a branch office of its Silverbell department store, which also served as the town’s train station. But the company’s monopoly ended with the establishment of two competing stores; one ran by Oscar Rosan and another by a Mr. Seron. Heimbach and Decker

offered lodging at the Rockland Hotel, while the diversified firm of A. Nielson & Company spurred Sasco’s growth by dealing in real estate, loans, and building materials. Sasco contained several saloons as well as a restaurant ran by Tom Quong Budd and his partners Uye Lee and Long Lee. Jesus Gradias served as the town’s shoemaker and R. B. Morales offered services as a barber.²⁸

Bankruptcy, Litigation, and ASARCO

Ironically, Sasco’s ultimate collapse was not triggered by ore grade or copper prices but by the flooding of a silver mine. Throughout their existence, the DCA and its subsidiaries were burdened with paying the interest on the bonds and loans that had been used to finance their early development. As the mines and other businesses failed to produce the expected profits, the companies fell further into debt and were left financially vulnerable to unforeseen expenses or disasters. Such a disaster came in the form of Tombstone’s ground water, which had continued to plague mining operations despite the company’s extensive pumping efforts. On June 1st, 1909, problems with a fuel line caused the main water pumps to fail on the 1000-foot level and within hours everything below the 800-foot level was flooded, including the pumps themselves. With the most profitable ore sunk two hundred feet underwater, and thousands of dollars worth of equipment lost, production at the flagship property of the DCA came to a sudden stop.²⁹ Against Staunton’s recommendations, Murphy ordered workers to begin pumping and reclaiming the Tombstone mines, leading to Staunton’s resignation from the DCA and all associated companies in May of 1910.³⁰

Under Murphy’s direction, the lower levels of the Tombstone mines were reclaimed by the end of the year, but the financial burden was more than the DCA could support. A lack of funds stopped development at the Silverbell mines and halted the flow of ore to the smelter, which ceased operations on August 10. Murphy began a desperate search for financial backing and nearly succeeded in obtaining a \$500,000 loan from the Southern Pacific Railroad. However, the deal fell through when the Southern Pacific looked into the DCA’s finances and Murphy’s last hopes for recovery collapsed.³¹ In 1911, the DCA was forced to declare bankruptcy, accompanied by most of its subsidiary companies. The Tombstone mines were quickly sold to the Copper Queen Mining Company while the Imperial Copper Company, the Arizona Southern Rail Road

and the Southern Arizona Smelting Company were placed into receivership with M. P. Freeman serving as receiver and trustee.

Ever optimistic, Murphy hoped to avoid litigation and somehow reorganize the companies with the purpose of eventually paying off all debts. But the number of investors and creditors made it difficult to obtain cooperation between all the involved parties. The biggest trouble came from the large number of smaller creditors and local businesses that were owed payment by the Imperial Copper Company for supplies and services. Many of these smaller claimants gathered together under Tucson attorney Francis Hartmann to ensure that their interests would not be overlooked in favor of the major stockholders. In April 1914, Murphy unsuccessfully offered to settle with these smaller claims at the rate of twenty-five cents to the dollar.

Later that summer, the Investors Bank Company, represented by the Bisbee law firm of Ellinwood and Ross, attempted to foreclose on the Imperial Copper Company properties. Hartmann immediately filed suit to block the foreclosure. Siting a conflict of interest, he also forced Freeman to resign as trustee of the Imperial Copper Company and was allowed to choose Freeman's replacement.³² With the new trustee under his influence, Hartmann argued that the Southern Arizona Smelting Company and the Arizona Southern Rail Road were not really independent companies. Instead, he claimed that they had existed solely for the use and convenience of the Imperial Copper Company. Following this line of reasoning, he argued that the assets of these subsidiary companies, including the copper-rich flue dust and smelter slag, were actually the property of the Imperial Copper Company and could be sold to settle its debts. Murphy's attorney, Selim Franklin, fought to counter these and other claims, but the ambiguous relationship between the various DCA companies would continue to haunt the litigation proceedings.

Over the winter of 1915-16, rising copper prices from the First World War brought the plight of the mine and smelter to the attention of the powerful American Smelting and Refining Company (ASARCO). Represented by Julius Kruttschnitt, ASARCO began negotiations with Murphy, Franklin, and the other major creditors and investors represented by Ellinwood and Ross.³³ In early 1916, the courts approved the foreclosure and subsequent sale of the Imperial Copper Company properties to Leo Goldschmidt of Tucson.³⁴ In March of that year, Goldschmidt entered an agree-

ment with ASARCO whereby the stock and deeds to the mine, smelter, and railroad would be placed in escrow and then transferred to ASARCO once Goldschmidt had been reimbursed for the original purchase price plus fees and interest. In addition, ASARCO agreed to pay the companies' remaining debts and to organize the properties under a new corporation in which Murphy would receive a thirty-five percent interest. Until the contract was settled, ASARCO would lease the properties with one half of the profits being applied toward paying off debts, beginning with those of the Southern Arizona Smelting Company and the Arizona Southern Railroad.³⁵

Hartmann fought these developments with another series of lawsuits aimed at Murphy and the Development Company of America, whom he claimed were manipulating the bankruptcy proceedings for their own benefit and that of a few major investors.³⁶ He also briefly succeeded in having the courts award possession of the flue dust to his trustee who then quickly ordered them sold. Franklin, joined by Ellinwood and Ross, continued to argue that the Southern Arizona Smelting Company and the Arizona Southern Rail Road were independent companies. Furthermore, they successfully argued that the stock, and thus control of the assets, of these companies had been included in the foreclosure on the Imperial Copper Company. The continued stress of the litigation combined with the personal attacks during Hartmann's lawsuits wore heavily on Murphy. After a prolonged illness he died in Prescott on June 23, 1917.³⁷ Murphy's death, combined with ASARCO's acquiring of the major claims, would eventually bring most of the litigation to a close.

Under ASARCO's management, the town of Sasco enjoyed a short revival. A small schoolhouse was built for the worker's children and a two-room concrete jail was constructed near the eastern townsite. F. Keith Peyton spent several years in Sasco as a small boy and he remembers a friendly little community where the biggest excitement was the arrival of the weekly supply truck from Tucson. Despite the peaceful surroundings, the smelter workers still prided themselves as being a tough lot. Peyton remembers one popular story about a hard-drinking worker named Jacobson who kept a large Gila monster as a pet and had trained it to climb up his arm on command. While drinking one night, Jacobson attempted to perform the trick, only to discover that the lizard refused to move. Disgusted with his pet, he pinched it on the tail and was promptly bitten. As

Peyton humorously recalls, "The Gila monster died the next day, and Jacobson reported for work."³⁸

By 1918, Sasco's population had rebounded to over a thousand people and the revived business district included a general merchandise store, several groceries, two assayers, and a billiards hall.³⁹ Alice Kemper helped run the small post office while her brother, Robert, delivered the mail to Red Rock using one of the modified rail cars.⁴⁰ In April, the Arizona Mining Journal reported that the "appearance of the town and smelter works bespeaks a high class of workmanship."⁴¹ The renewed activity also attracted the occasional desperado. One such character, by the name of "Butch" Sundeen, made plans to murder and rob the Wells Fargo agent whom transported the company payroll from Tucson to Sasco. Sundeen gave up on the plot after a suspicious Sheriff Miles spent several nights shadowing the Wells Fargo automobile. However, the sheriff was unable to stop the Wells Fargo agent himself from walking off with the payroll a short time later. The agent, a Mr. J. G. Eades, disappeared after removing over \$9,000 in currency and \$1,000 in silver from the office safe.⁴²

Despite the renewed growth, Sasco's revival turned out to be short-lived and driven primarily by a war demand that quickly declined as the fighting came to a close. In early 1919, ASARCO ceased operations at the Sasco smelter and the plant was shut down for the last time. The same year, a world-wide influenza epidemic passed through the small settlement and that summer the post office was closed.⁴³ Finally in 1921, continued low copper prices forced the Silverbell mines to close, bringing the trains of the Arizona Southern Railroad to a halt and permanently severing Sasco's economic link to the outside world. Sasco was already a ghost town by the time the train tracks and smelter buildings were torn up in the mid 1930s.

Ultimately, Sasco's initial failure had been a mixture of bad luck, bad timing, and an over-extended business network. It is ironic that at about the same time that the DCA was entering bankruptcy, the stagnant copper prices that had plagued the company's existence began a steady rise that would last to the 1920s. Were it not for the flooding of the Tombstone silver mines, the DCA might have survived its financial challenges to become a major force in Arizona's mining industry and Sasco might have grown into a modern town. But like most large mining ventures of its time, Sasco's survival hinged on more than just mining and metal prices.

The seemingly isolated desert camp was actually tightly linked to the much larger network of mines, railroads, and investors that had provided the crucial financial and technical support for the smelter's development. It was a factory built for a copper mine, but destroyed by the failure of a silver mine; a camp of western workers economically and legally bound to the wealthy elite of the east. Sasco was an example of the increasing technical complexity and economic inter-dependency that marked the growth of Arizona's copper mining industry. Successful copper mining depended on more than just a pickaxe and a grubstake. Providing modern large-scale smelting facilities, reliable transportation, and strong economic, technical, and legal support were no longer just luxuries for starting a mining operation...they had become the very nature of the business.

References

General Notes: This chapter is expanded from an article originally done by the author for the Journal of Arizona History. See Berg, Erik, "Hard Rock and High Hopes: The Early Days at Sasco," *The Journal of Arizona History*. (Spring 1996), pp. 25-46. For an excellent overview on the life of William Staunton see Kevin Mark Britz's "The Arizona Mining Career of William F. Staunton 1883-1931" (master's thesis, University of Arizona, 1986).

¹ Hereford, Rockwell. *A Whole Man and a Half Century* (Pacific Grove: Boxwood Press, 1985), pp. 17-23. After his involvement with the DCA, Henry Robinson began a successful career in West Coast power and lumber ventures that would later make him one of the country's wealthiest men and a financial advisor to presidents Woodrow Wilson and Herber Hoover.

² "The Development Company of America", *The Engineering and Mining Journal*, Vol. 92, No. 6, 5 August 1911, pp.242. One of the company's promoters noted that, "by the system of selling the bonds of one company against those of another, he could finance the universe." Most of the bonds for the subsidiary companies were issued at six percent interest. See also "The Development Company of America", *The Engineering and Mining Journal*, Vol. 92, No. 2, 8 July 1911, pp. 61.

³ Staunton, William F. "Memoirs of William Field Staunton, The First Fifty Years 1860-1910." Unpublished memoirs and papers. Box 1, Staunton Papers, University of Arizona Special Collections,

Tucson, Ariz. pp. 44-57.

4 Hereford, pp. 31

5 The Imperial Copper Company was incorporated on May 11, 1903 shortly before the actual purchase of the Silverbell properties on May 20. By March of 1904, the Imperial Copper Company controlled a total of 61 claims in the Silverbell area. *Annual Report of The Imperial Copper Company For the Year Ending March 31, 1904* (Phoenix, AZ: Arizona Republican Press, 1904)

6 Staunton, *Memoirs* pp. 177-178

7 Staunton to V. L. Mason, July 2, 1907, Box 3, Staunton Papers.

8 Barnes, Will C. *Arizona Place Names* (Tucson: The University of Arizona Press, 1988) pp. 392

9 Yjinio Aguirre interview, Casa Grande, April 2, 1994, author's files. The Aguirre family has played an important role in the area's ranching industry since the 1870s. Mr. Aguirre spent many of his early years on his family's ranches near Sasco.

10 William Staunton to F. M. Alger, 14 March 1908, Box 3, Staunton Papers, University of Arizona Special Collections, Tucson, Ariz.

11 Staunton, *Memoirs*, 150-151

12 "Report of the General Manager, Tombstone, Arizona, April 11, 1907, "in *Reports Related to the Development Company of America*, pp. 180-182, in "Mining Reports, Arizona" (bound collection), Arizona Historical Foundation (AHF), Hayden Library, Arizona State University, Tempe. The Sasco smelter was one of Arizona's last large smelters to rely on the age-old technology of blast furnaces for the primary smelting of the ore. At the time of Sasco's construction, most smelters were switching over to more modern rebervatory furnaces where the fuel and the ore did not come into direct contact.

13 Ellis, Owen W., *Copper and Copper Alloys* (Cleveland: American Society for Metals, 1948) pp. 31-36

14 "The Sasco Smelter", *Mines and Methods*, Vol. 1, No. 5, January, 1910, pp. 177-180. The Sasco power plant used four oil-fueled Freeman boilers rated at 300 horsepower each. Additional emergency power was provided by a 150-kw engine-dri-

ven generator.

15 *Report of General Manager*, April 11, 1907 pp. 8-10 from Reports Related to the Development Company of America.

16 "Pinal County Smelter", *The Arizona Blade*, 8 February 1908. The article also discusses the possibility of building a railroad from Florence to Sasco to obtain custom ore from the mines along the Gila River. On April 18, *The Arizona Blade* reported that the production at the smelter had already reached 380 tons per day.

17 Staunton, *Memoirs*, 201-202

18 William Staunton to F. M. Murphy, 8 February 1909, Box 3, Staunton Papers, University of Arizona Special Collections, Tucson, Ariz. The furnace had been in continuous operation for one year and seven days before leaks in the jacket forced the operators to shut it down for repairs. This was an unusually good record for a blast furnace at that time.

19 Peters, Edward Dyer. *Practice of Copper Smelting*. (McGraw Hill Book Co., New York, 1911), pp. 454-455. Collecting and reprocessing the copper rich dust blown from the furnace was an important procedure in all copper smelters. In addition to the flue dust, converter slag was also used to mix especially fine or fragmented ores before processing.

20 "Annual Report of the Imperial Copper Co.", Sept. 30, 1909, pp.7. In April 1909, the Copper King Mine in the Tucson Mountains entered a contract to have its ore processed at Sasco. (see "Chalcopyrite Body in Copper King Mine", *Prescott Journal-Miner*, April 24, 1909, pp.3).

21 Staunton to F. M. Murphy, March 4, 1909, Box 3, Staunton Papers, University of Arizona Special Collections, Tucson, Ariz.

22 "Smelting at Sasco", *Prescott Journal-Miner*, 24 April 1909, pp. 3. The article also reports that the company was considering adding a third furnace.

23 Staunton to V. L. Mason, Feb. 17, 1908, Box 3, Staunton Papers, University of Arizona Special Collections, Tucson, Ariz.

24 Yjinio Aguirre, *interview*

25 Yjinio Aguirre, *interview*

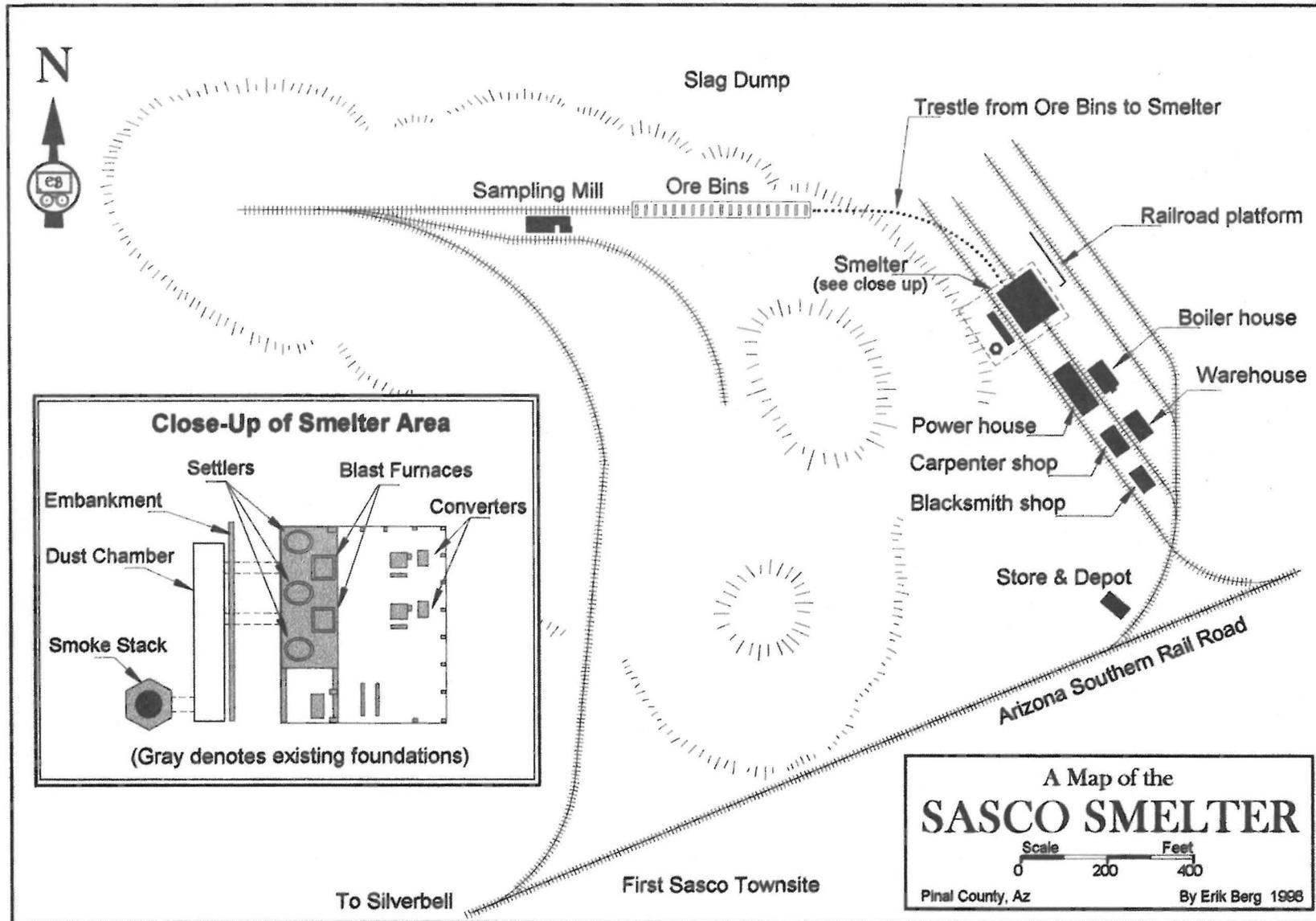
- 26 U. S. Bureau of the Census, *Thirteenth Census of the United States: 1910 - Population, 1910*, Sasco precinct
- 27 "Local Happenings of Pinal County", *Arizona Blade-Tribune*, 13 February 1909
- 28 *Arizona Business Directory 1909-1910* (Denver, Gazetteer Publishing Co., 1909) pp. 470
- 29 Butler, B. S., Wilson, E. D., and Rasor C. A., *Geology and Ore Deposits of the Tombstone District, Arizona*, Arizona Bureau of Mines bulletin No. 143 (Tucson: University of Arizona, 1938) pp. 46-47
- 30 William Staunton to Frank Murphy, 21 May 1910, Box 3, Staunton Papers, University of Arizona Special Collections, Tucson, Ariz. In addition to the financial cost, Staunton was concerned that attempting to reclaim the mines without using backup pumps might lead to another disaster. At the time of his resignation, Staunton served as Vice President and General Manager for the Tombstone Consolidated Mines Company, the Imperial Copper Company, the Arizona Southern Railroad Company, and the Southern Arizona Smelting Company. In addition, he also served on the board of directors for the Poland Mining Company, the Congress Consolidated Mines Company, and the Development Company of America. Although he officially resigned on May 21, 1910, Staunton remained with the company for several more weeks until his duties could be properly assigned to others.
- 31 Murphy to W. C. Howard (Du Pont Powder Company), June 15, 1916, Selim Franklin Papers, University of Arizona Special Collections, Tucson, Ariz.
- 32 Selim Franklin to John Ross, June 19, 1914, Selim Franklin Papers, University of Arizona Special Collections, Tucson, Ariz. As receiver, Freeman remained in control of the mining properties and permanent fixtures. The new trustee, John Martin, assumed control of all company assets not related to the physical property itself. Freeman also remained trustee for the Southern Arizona Smelting Company and the Arizona Southern Railroad.
- 33 Julius Kruttschnitt was the manager at ASARCO's Tucson office and supervised the company's operations at Silverbell. He went on to have a long and successful career with ASARCO that included extensive work in Mexico and Australia.
- For details on the career of Julius Kruttschnitt see Donald Chaput and Kett K. Kennedy's *The Man from ASARCO* (Parkville, Australia: The Australasian Institute of Mining and metallurgy, 1992).
- 34 Unsigned letter from Leo Goldschmidt to Consolidated National Bank of Tucson, December 1916, Sasco Folder, History Box, ASARCO Tucson Office, Tucson, Arizona. While the letter indicates that Goldschmidt acquired the properties at a receiver's sale on March 31, 1915, it appears that a final ruling on the foreclosure did not occur until early in 1916 (see John Ross to Selim Franklin, March 31, 1916, Selim Franklin Papers, University of Arizona, Special Collections, Tucson, Arizona).
- 35 Draft of a "Supplemental Agreement" between American Smelting & Refining Company and Leo Goldschmidt dated October 1917, Sasco Folder, History Box, ASARCO Tucson Office, Tucson, Arizona. The supplemental agreement amended the contract and allowed ASARCO to purchase Murphy's interest in the contract and make it unnecessary to organize a new corporation.
- 36 Frank Murphy to M.P. Freeman, July 11, 1916, Selim Franklin Papers, University of Arizona Special Collections, Tucson, Arizona. Hartmann particularly attacked Murphy's thirty-five percent share in the new company.
- 37 "Frank M. Murphy, Empire Builder, Answers the Summons of Death", *Prescott Journal-Miner*, 24 June 1917, pp. 1. Despite his later financial difficulties, Murphy was regarded as one of the state's most prominent businessmen and his death was widely mourned in business and political circles. Murphy's estate was represented through the remainder of the DCA litigation by the Prescott law firm of Norris, Spalding, and Norris. The last of the litigation appears to have come to a close by the end of 1918.
- 38 Peyton, F. Keith, "SASCO — Boyhood in an Arizona Smelting Community", *Password*, Vol. 22, No. 2, Summer 1977, pp. 75-79.
- 39 *Arizona Business Directory 1918* (Denver, The Gazetteer Publishing Co., 1918) pp. 470. Population figures vary for Sasco during the ASARCO period. *The Arizona Business Directory* reports a peak population of 1,800 in 1918 while the *Arizona Mining Journal* reported a population of around 1,000 during a visit to the town in April of the same year.

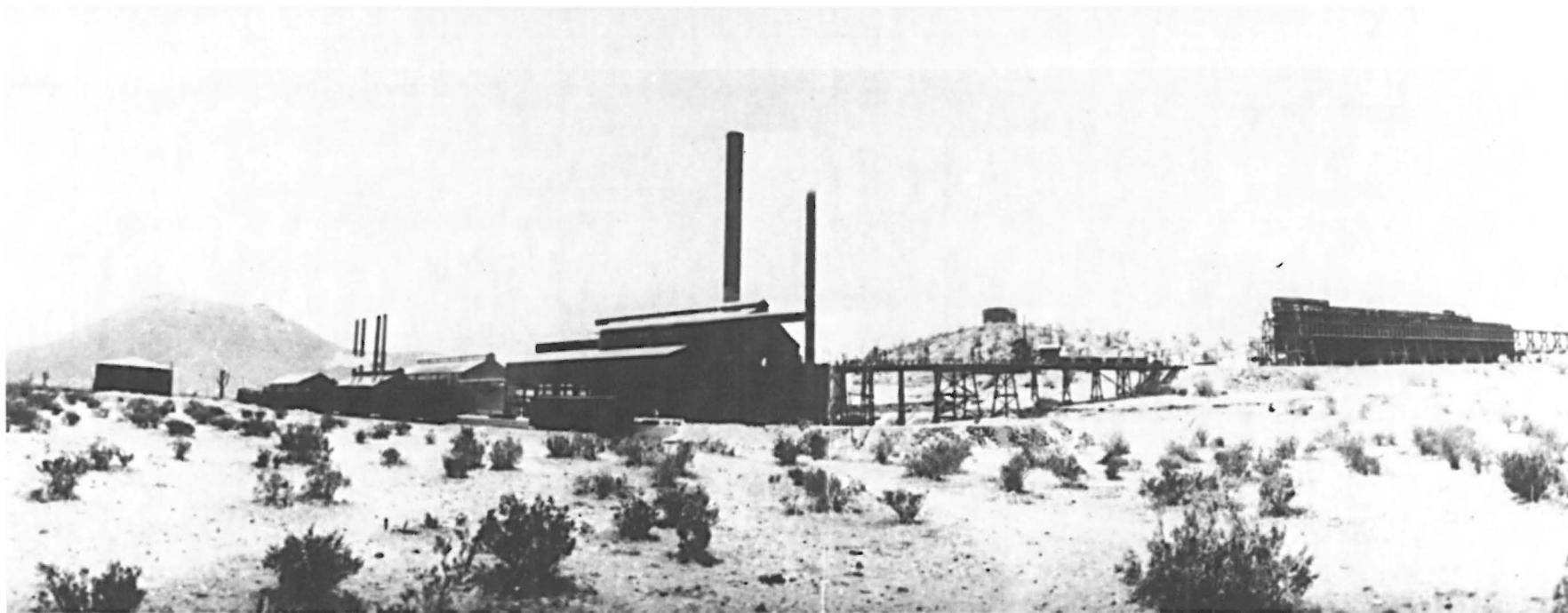
40 Yjinio Aguirre, interview. Alice Kemper also helped close down the post office in 1919. While packing up the post office materials they discovered \$800 worth of unused stamps still in storage. (A very large amount for a town of that size).

41 "Pinal County Observations", *Arizona Mining Journal*, April 1918, Vol. 1, No. 10, pp. 26. In addition to 'substantial residences' and several stores, the article also mentions that the camp featured a company reading room and a "movie" house.

42 "Sasco Smelter's Payroll Fund of \$10,000 Missing; Express Agent Disappears; No Clew", *The Arizona Daily Star*, 20 March 1918, pp. 1. The article also reported that Mr. Eades had been the agent at Sasco for about 18 months and was considered thoroughly trustworthy. A short time after his failed Sasco plans, Sundeen was jailed for the killing of Charles Loeb.

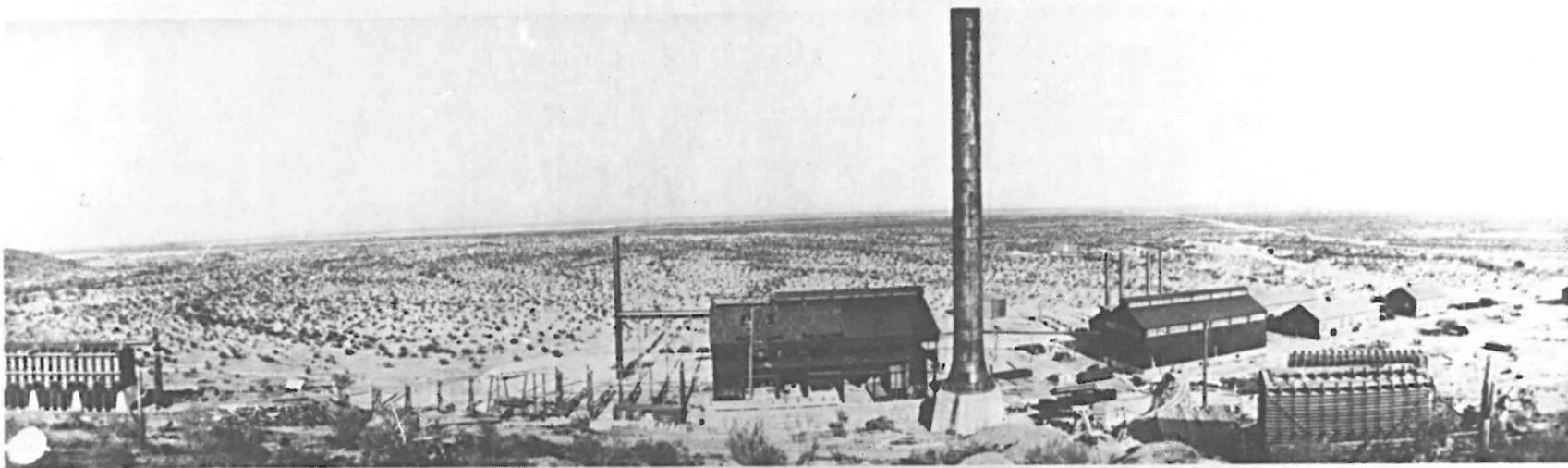
43 O'Brian, Carole A., "Jerome - A Mining Legacy in the Black Hills of Central Arizona," in *History of Mining in Arizona Vol. 2*, ed. J. Michael Canty and Michael Greeley (Tucson: Mining Club of the Southwest Foundation, 1991), pp. 86. At the start of World War One, the price of copper jumped from an average of 17.47 cents per pound during 1915 to a peak average of 29.19 cents per pound during 1917. The end of the war ended the demand for many metals and dropped the average price of copper during 1919 to 18.19 cents per pound.





Imperial Copper Co's Smelter. Sasco, Arizona.

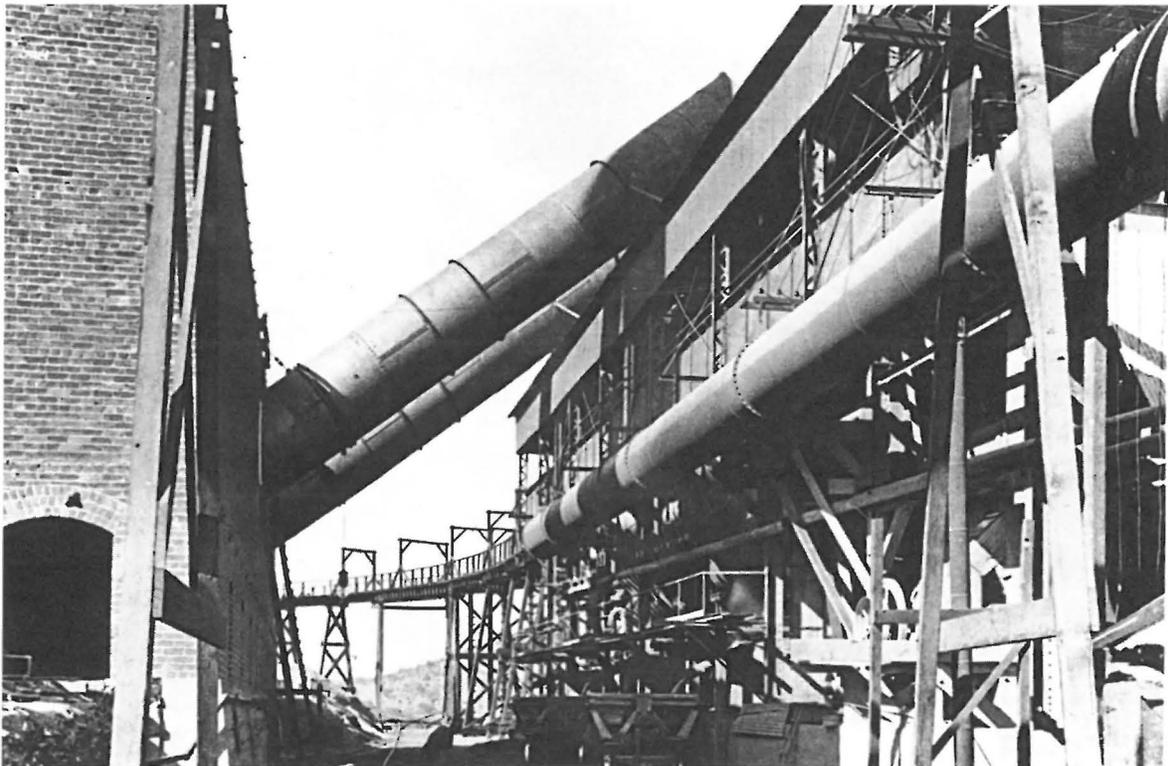
Panorama view of the smelter and ore bins looking southwest. Note the train unloading ore on top of the ore bins. Photo courtesy of the University of Arizona, Special Collections c1908.



Panorama view of the smelter during construction. Photo courtesy of the University of Arizona, Special Collections c1908.



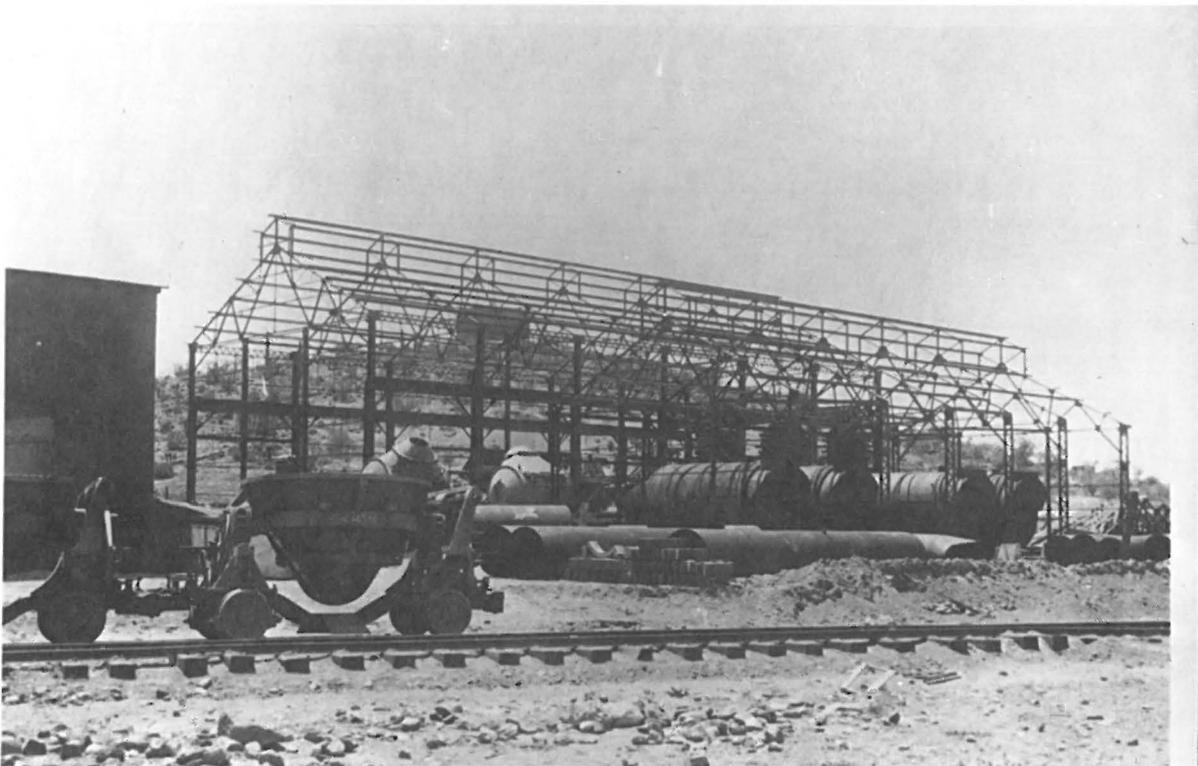
Close up of the smelter and dust chamber as seen from the ore bins. Note the slag pot being filled at the settler. Photo courtesy of the University of Arizona, Special Collections c1908.



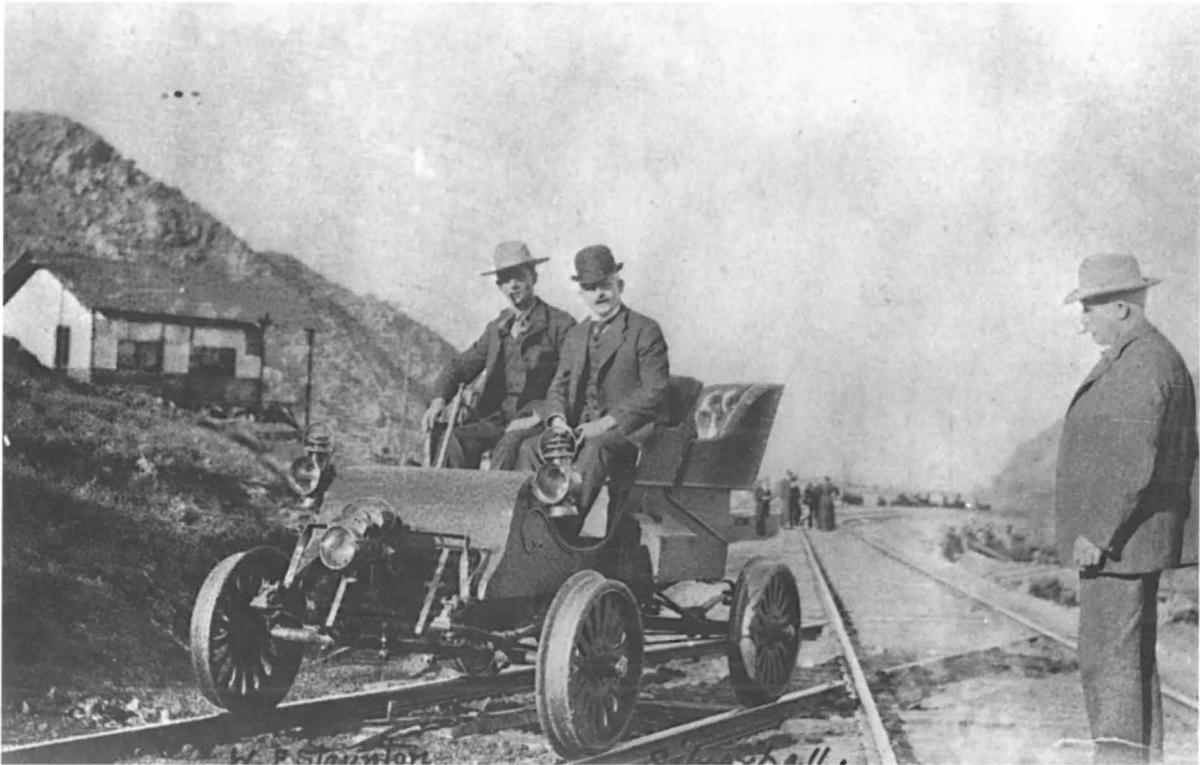
Looking north between the dust chamber and the smelter. Sasco, Arizona c1908. Courtesy of Gene Wright Collection.



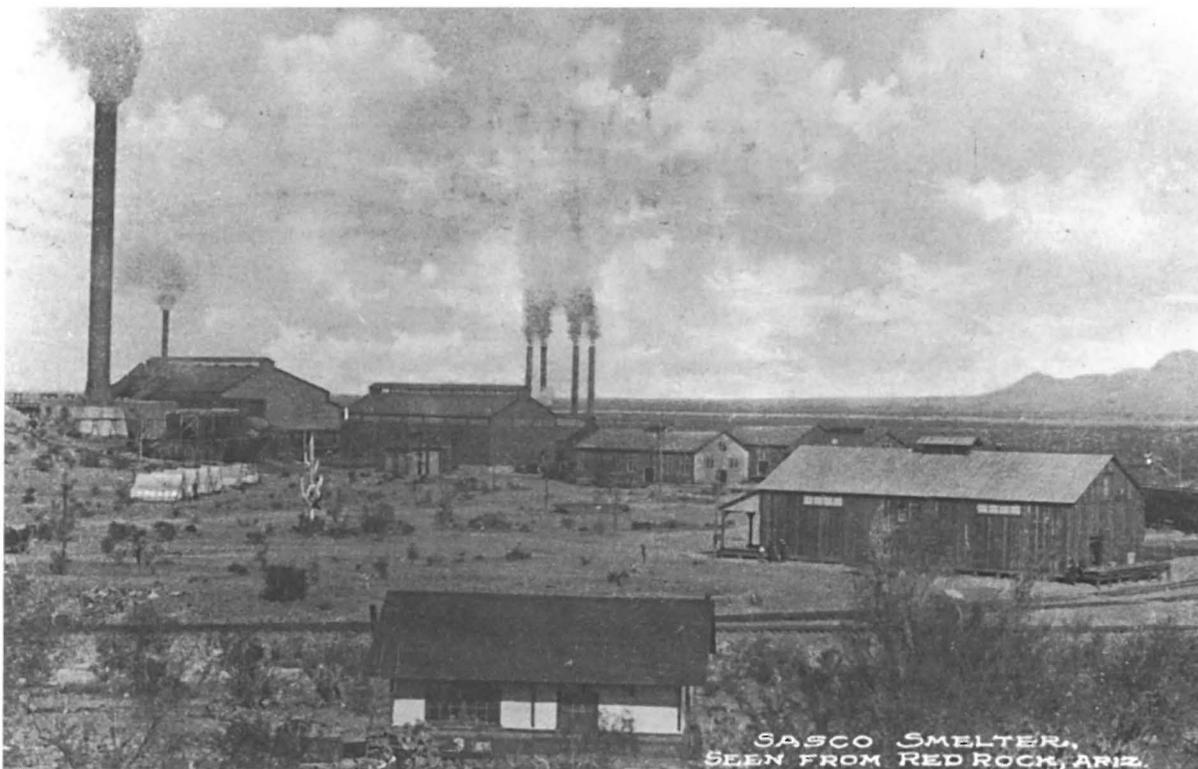
The foundations of the smelter during construction. The completed frame of the power plant and boiler house can be seen in the background. Photo courtesy of the University of Arizona, Special Collections.



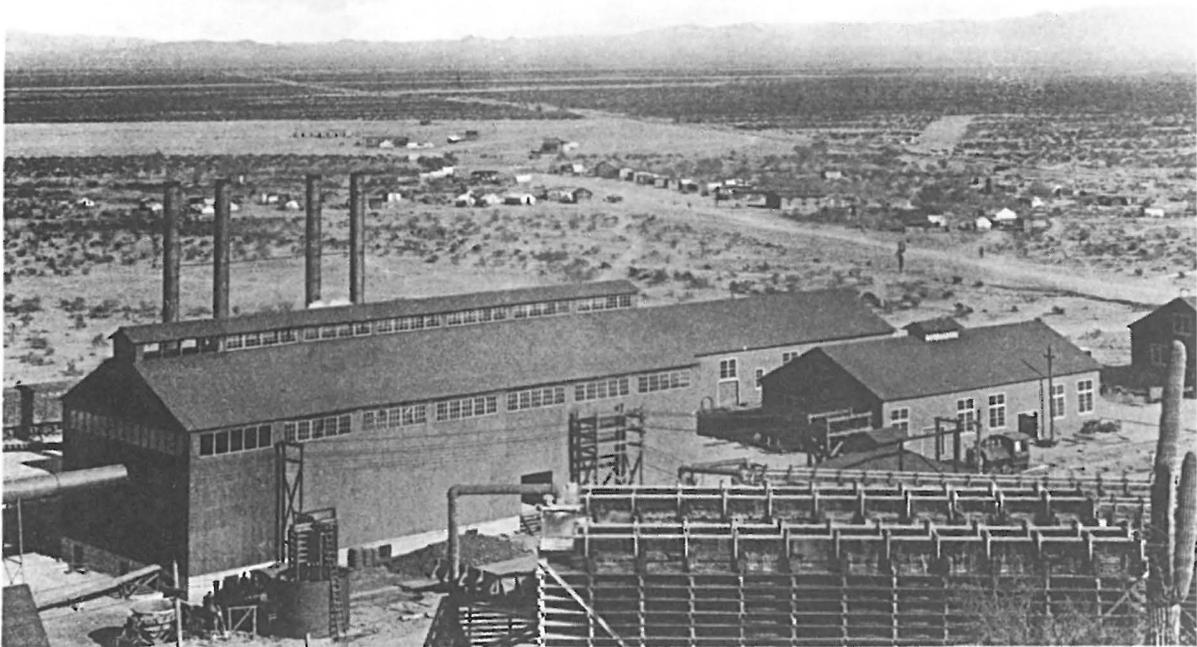
The frame of the boiler house during construction. One of the slag pot cars can be seen in the foreground. Photo courtesy of the University of Arizona, Special Collections.



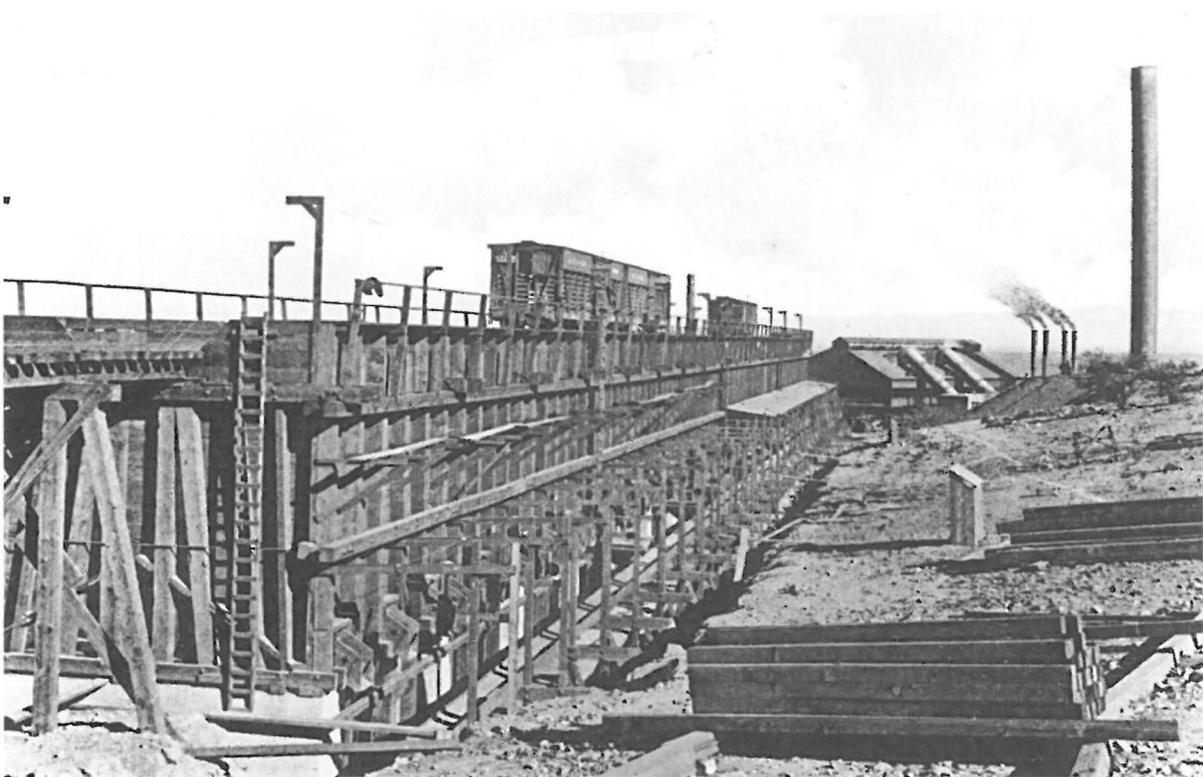
William Staunton (left) and Eliphlet Gage (far right) with rail car at Silverbell. The man sitting next to Staunton appears to be Frank Murphy. Photo courtesy of the University of Arizona, Special Collections.



Sasco smelter during operation. The building to the right is the company store and depot. Photo courtesy of Gene Wright Collection.



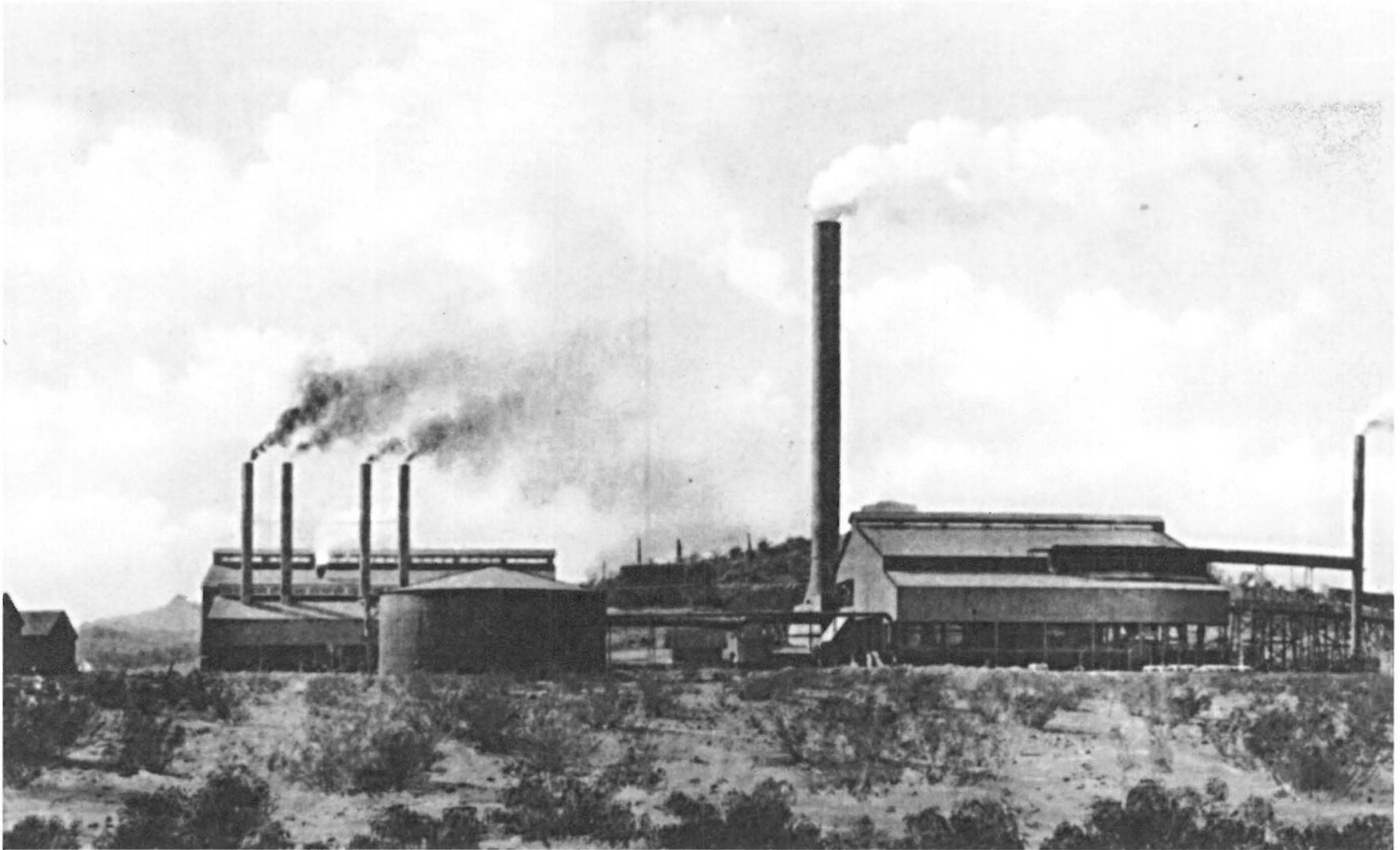
Close-up of the power plant, blacksmith shop, and carpentry shop. The homes and shops of the second 'Smelter Addition' townsite can be seen in the background. Photo courtesy of Gene Wright Collection.



Close-up of the ore bins on the north side of the smelter hill. Photo courtesy of Gene Wright Collection.



Homes at the original Sasco townsite. Courtesy of Gene Wright Collection.



Panorama view of the smelter complex looking west. Courtesy of Gene Wright Collection.



The Hotel Rockland and American Restaurant in Sasco. Courtesy of Gene Wright Collection.

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